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मानक

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Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

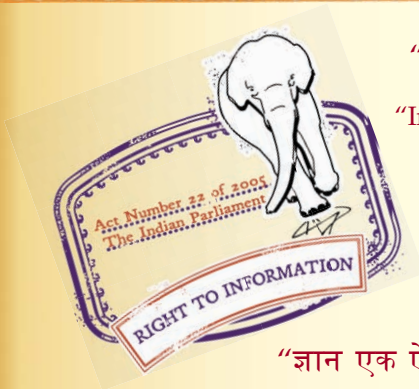
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 8252-3 (1978): Environmental tests for aircraft equipment, Part 3: Humidity (24 hours cycle) [TED 14: Aircraft and Space Vehicles]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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ENVIRONMENTAL TESTS FOR AIRCRAFT EQUIPMENT

PART III HUMIDITY (24-HOUR CYCLE)

1. Scope — Specifies tests to assess the resistance of equipment to high humidity conditions and the accompanying daily cycles of temperature such as those encountered in tropical areas.

1.1 This standard applies to equipment mounted externally on aircraft, to equipment in unpressurized bays protected from rain and sunlight by the aircraft structure, and to equipment in zones where no air-conditioning is applied while an aircraft remains out of service. It is not intended to be applied to equipment that is packed and in a store, but may be applied to such equipment that has been unpacked. The test determines the degree to which serviceability is impaired by corrosion or other deterioration.

2. Grades of Resistance to Humidity — When required by the relevant equipment specification, the equipment shall conform with one of the following grades of resistance to humidity:

- a) *Grade A* — Applicable to equipment to demonstrate resistance to conditions that occur in nature, for example, to equipment in unconditioned but ventilated bays and to items of exposed equipment.
- b) *Grade B* — Applicable to equipment installed in semi-protected zones of aircraft (pressurized compartments and conditioned equipment bays) but which may only occasionally be subjected to a high vapour pressure resulting from a combination of high bay temperature in aircraft zones where moisture may have accumulated, for example, from condensation. Grades B1 and B2 are alternative test cycles which are currently in use.
- c) *Grade C* — It is the severe humidity grade used to accelerate defects resulting from exposure to conditions of high vapour pressure and prolonged exposure to humidity.

3. Test Chamber

3.1 The test chamber shall be so constructed that the temperature and humidity can be varied cyclically and controlled within the limits specified in 5.

3.2 Condensed water shall not be allowed to drip on the equipment under test.

3.3 The temperature and humidity shall be monitored by sensing devices located in the working space. Conditions within the working space shall be kept as uniform as possible by continuous air movement having a velocity not exceeding 45 m/min.

3.4 Water used for the humidification of the chamber shall have a pH value between 6.5 and 7.5 measured at 25°C, or shall have a resistivity of not less than 500 Ω m.

4. Test Conditions

4.1 The appropriate standard conditions stated in IS : 8252 (Part I)-1976 ' Environmental tests for aircraft equipment: Part I General ' shall apply.

4.2 The equipment shall be subjected to the test described in 5 of the standard. It shall, unless otherwise specified in the relevant equipment specification, be mounted in its normal operating attitude.

4.3 Connections to the equipment may be made as in normal operation or, if permitted by the relevant equipment specification, may be made immediately after the equipment is removed from the test chamber.

4.4 Unless otherwise required by the relevant equipment specification, all covers shall be in position and all other seals made as for normal operation.

4.5 The equipment shall not be operated at any time during the test, unless this is specifically required by the relevant equipment specification.

5. Test Procedure

5.1 Initial Examination — The equipment shall be visually, mechanically and electrically checked, as required by the relevant equipment specification, and any sealing features shall be checked to ensure that they have been assembled correctly.

5.2 Test Cycle — The equipment shall be placed and mounted in the test chamber, with or without connections as required by the relevant specification.

5.2.1 Equipment Grade A and Grade B₁

5.2.1.1 The temperature of the equipment shall be stabilized to $25 \pm 3^\circ\text{C}$ and the humidity of test chamber increased to not less than 95 percent RH.

5.2.1.2 The equipment shall then be subjected to a diurnal variation of humidity between temperature limits of 25 and 40 or 55°C as appropriate to the grade. The test cycle and humidity limits shall be as shown in Fig. 1.

5.2.1.3 The equipment shall be subjected to the number of such cycles as is appropriate to the grade (see 5.3).

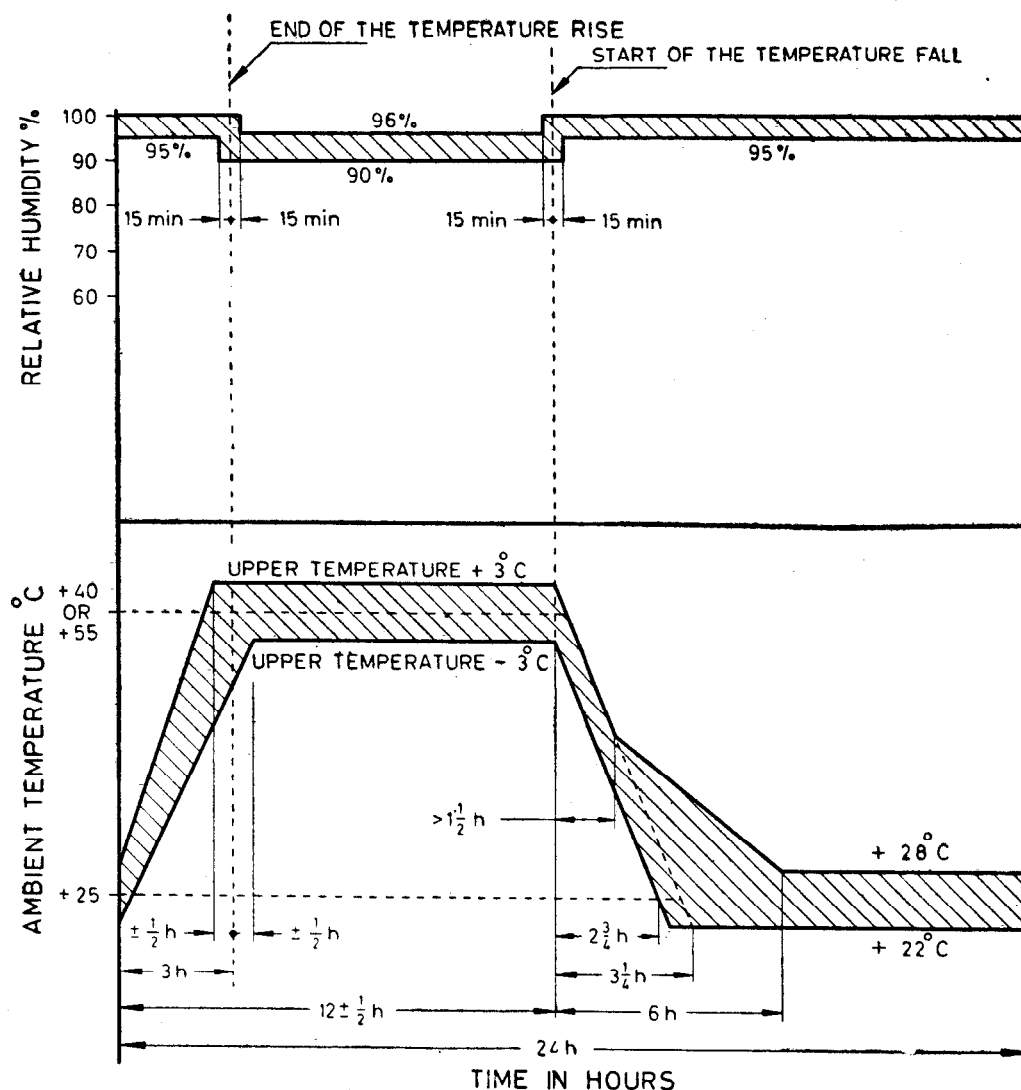


FIG. 1 TEST CYCLE — EQUIPMENT GRADES A AND B₁

5.2.2 Equipment Grade B₂ and Grade C

5.2.2.1 The temperature of the chamber shall be raised to the upper temperature limit of 50 or 70°C $\pm$ 3°C as appropriate to the grade, in a period of 2 $\pm$ 0.5 hours and a relative humidity of not less than 95 percent RH. These conditions of temperature and humidity shall be maintained for a further 6 $\pm$ 0.5 hours (see Fig. 2).

5.2.2.2 During the remaining period to complete a 24 h cycle (that is, over a nominal 16 h period) the temperature shall be decreased gradually to 38°C or lower; the humidity shall be maintained as high as possible but shall not fall below 65 percent RH.

5.2.2.3 The equipment shall be subjected to a number of such cycles as appropriate to the grade.

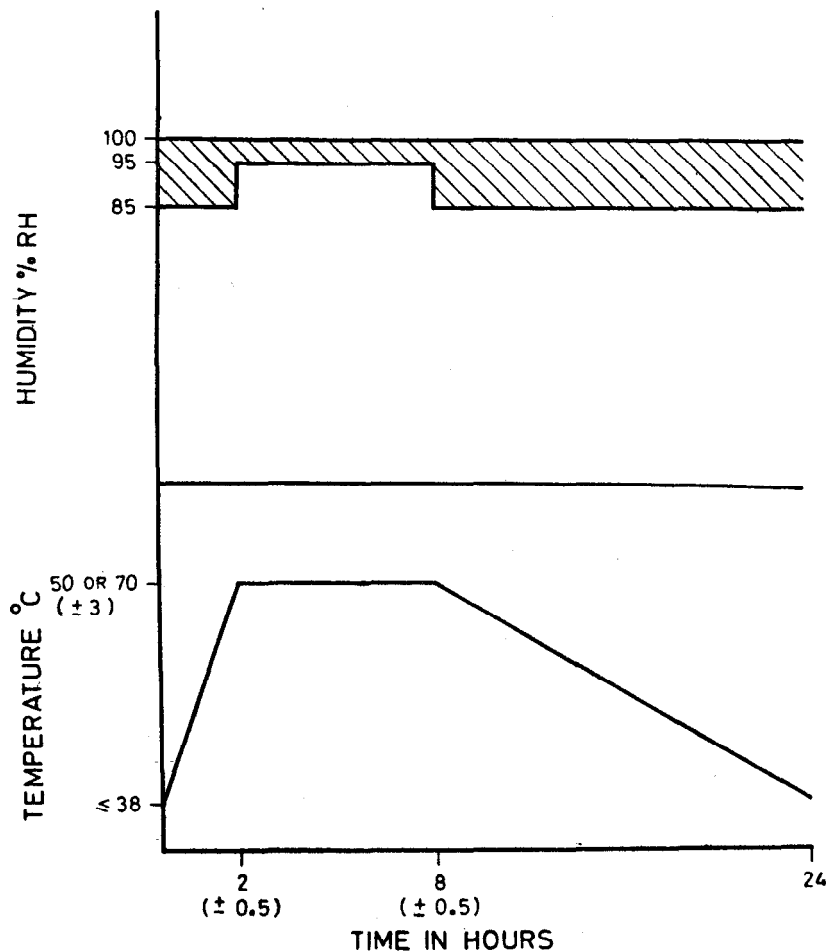


FIG. 2 TEST CYCLE — EQUIPMENT GRADES B₂ AND C

5.3 Test Severity — The severities appropriate to the various equipment grades shall be as stated in the following table:

Equipment Grade	Upper Temperature	Lower Temperature	Number of Cycles
A	40 $\pm$ 3°C	25 $\pm$ 3°C	12
B ₁	55 $\pm$ 3°C	25 $\pm$ 3°C	2
B ₂	50 $\pm$ 3°C	$\leq$ 38°C	2
C	70 $\pm$ 3°C	$\leq$ 38°C	10

Note — The number of cycles may be extended by the relevant equipment specification.

6. Measurements — If allowed by the relevant equipment specification, a period of 15 minutes may elapse after applying the power before carrying out the performance check.

6.1 The equipment shall be checked, for example, by having the normal power applied, either while it is still in the chamber or immediately on removal from the chamber, as required by the relevant equipment specification, and it shall function as required by the latter specification.

6.2 After its functional check, the equipment shall be subjected to any other tests, for example, insulation resistance, flashover voltage, etc, as required by the relevant equipment specification, and it shall finally be subjected to a visual examination for evidence of corrosion or other deterioration.

6.3 No intermediate measurements shall be made, unless specifically required by the relevant equipment specification.

6.4 It is recommended that no period of recovery (for example, wiping off or draining free moisture) should be permitted by the relevant equipment specification.

7. Information to be Stated in the Relevant Equipment Specification — When a humidity test is specified in the relevant equipment specification, the following information shall be given, as far as applicable:

	<i>Relevant Clause</i>
a) The equipment grade	2
b) Mounting attitude, if other than normal	4.1
c) Connection permitted after removal from test chamber, if applicable	4.3 and 5.2
d) Mechanical and electrical tests to be made before placing the equipment in the chamber	5.1
e) Intermediate measurements, if any	4.5 and 6
Note — It is recommended that the relevant equipment specification should not call for intermediate measurements or checks on equipment containing moving parts or where self-generated heat may alleviate the effects of humidity.	
f) Mechanical and electrical checks to be made at the end of the test	6
g) The degree of corrosion that may be tolerated	6

EXPLANATORY NOTE

This standard is one of the series of standards relating to the environmental and operating conditions for aircraft equipment. The scope and applicability of these standards is given in IS : 8252 (Part I)-1976.

This standard is based on ISO/DIS 2652 Environmental tests for aircraft equipment — Part 2.2 Humidity (24h cycle), issued by the International Organization for Standardization.